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SOME HYGIENE ISSUES ACCORDING TO THE CONDITIONS OF THE WORKERS OF POULTRY FARMS

Azim Akhrorovich Ortikov*

*Bukhara Medical Institute, Bukhara,
 UZBEKISTAN

ABSTRACT

The purpose of the study is to assess the environmental and hygienic impact of production factors on the health of poultry farm workers and to develop measures to improve working conditions, improve the environmental situation on the territory of farms. It is established that the unfavorable factors of the production environment of poultry farms are strenuous physical labor, neuropsychiatric stress, the impact on the human body of chemicals, bacterial and dust aerosols, fungal microflora, excrement and other products of poultry life.

KEYWORDS: Ecology, Hygienic Requirements, Working Conditions, Production Factors, Manual Labor.

INTRODUCTION

Poultry farming is the most industrially developed branch of animal breeding. Working conditions at poultry enterprises have a pronounced specificity, which determines the specifics of sanitary supervision at each technological process stage. The leading organizational forms of industrial poultry farming are their specialization in the eggs and meat production. Industrial poultry farms are built mainly according to standard projects designed for the maintenance of 250-500 thousand laying hens, 3-10 million broilers, 1-1.5 million ducklings, 0.25-0.50 million turkeys or ducklings per year. According to the State policy, in order to provide the population with meat products and eggs, at the initiative and support of President Sh.M. Mirziyoyev, starting in 2017, the organization of poultry complexes and poultry farms began to develop rapidly. At present, there are more than 60 poultry complexes and about 250 poultry farms in Bukhara region alone.

The research purpose: giving an ecological and hygienic assessment and the production factors influence on the health of workers in poultry farms and developing measures to improve them.

Materials and methods: The work was carried out on the basis of JSC "Bukhara Parranda" of Kagan region. The study of working conditions at each production stage was carried out by the sanitary inspection method and observation. The temperature measurements and the premises humidity at each production stage were carried out using an aspiration psychrometer (Sanitary Rules And Norms of the Republic of Uzbekistan 0324-16), which consists of ammonia, hydrogen sulphide, carbon dioxide - by aspiration method using the analyzer (SS 12.1.005.88) and dust by aspiration method .

RESULTS AND DISCUSSION

The production process at the enterprises is organized according to the flow method, taking into account the biological characteristics of the bird's body and consisted of a number of technological stages. These include obtaining hatching eggs from parent (brood) flocks; incubation and withdrawal of day-old chicks; their cultivation and recruitment of replacement and industrial herds; an industrial herd maintenance that provides the main products; primary processing of birds; preparation and distribution of feed; recycling. In the shops of the parent flock, intended for obtaining fertilized eggs, birds are kept in groups (4-5 roosters and 30-40 chickens) in two - three-tier automated cage batteries of the KBMP, KBR-3 type, or on the floor on a deep non-removable mat, mesh floors.

In the shops of an industrial herd, laying hens were housed in mechanized and automated cage batteries. The main operations in batteries (feeding, drinking, cleaning manure) are mechanized and automated, the eggs collection in automated sections was carried out by belt conveyors with a storage drive fed to the table, from where the eggs were collected, packed in cardboard boxes, or immediately fed by conveyors to the egg warehouse.

For the cage keeping of the parent and industrial herd, pavilion-type premises were built, for the floor, as a rule, one-story. The poultry houses size and their number are determined by the farm capacity. One poultry house accommodates 12-80 thousand laying hens, 10-20 thousand broilers and 4.5-6.4 thousand heads of parent stock. Buildings for keeping poultry, especially bearing chickens, were envisaged mostly windowless with extended daylight hours to 17-18 hours due to artificial lighting.

The microclimatic keeping conditions of an adult livestock of productive poultry in the workshops of the parent and industrial flocks corresponded to 12-18 °C in the cold and 18 -20 °C in the warm periods of the year with a relative humidity of 60-75%. At the same time, the maximum permissible concentration of ammonia is 10 mg/m, hydrogen sulfide -1 mg/m - for broilers and 5 mg/m for other bird species, and carbon dioxide 0.2% by volume. To ensure the required parameters of the air environment in the poultry premises, ventilation and heating systems of the "Climate" type are equipped, capable of operating in automatic mode according to a given program.

In hatchery shops, hatching eggs are sorted and stored in a warehouse at a temperature of 4-12 °C. According to a specific schedule, batches of eggs in the amount of up to 14-15 thousand pieces are most often disinfected with formaldehyde vapor, placed in trays and placed in incubators. During incubation, the equipment operating mode is monitored with the help of instruments and biological control is carried out on the 6th, 12th and 18th day (translucent eggs on mirage tables and weighing trays with embryos). Tilting egg trays are transferred to hatcher

on days 19-20. At the end of the incubation, the young are selected from trays into boxes, subjecting them to zoo technical sorting and, if necessary, additional sorting by gender, and transferred to other workshops. Hatchers, implements and workplaces are thoroughly cleaned and disinfected. Incubation waste is sent for recycling.

The hatcheries were located in free-standing one-story buildings, where incubation and hatching zones for the installation of incubators, rooms for sorting and storing eggs, a disinfection chamber, a washing room, utility and auxiliary rooms, including a sanitary inspection room, were provided. The most widespread are incubators with external servicing of the "Universal" type, the operation of which is fully automated, and the temperature in the chamber is maintained at 37.2-38.3 °C at a relative humidity of 49-64%.

In the workshops for growing young animals, the livestock were housed in age cage batteries (KBE-1, KBA-4, BKB) with transplants on the 30th, 60th and 120th days or in universal cage batteries designed for one-stage non-stop poultry rearing (KBU -3). Cell batteries are equipped with devices for mechanized distribution of feed and manure removal, groove, nipple micro-bowl shelves and removable electric heating devices. When fully kept on deep, permanent bedding, the birds were planted on the floor covered with a layer of wood shavings cut with straw 20-25 cm thick.

The air temperature in the places where the birds are located should be maintained at 35 °C -26 °C for the first 10 days and 26 °C -20 °C thereafter at a temperature in the hall of 28 °C-18 °C, relative humidity 55-70% and movement speed air 0.5-0.6 m / s. The gases content, according to zoo technical requirements, should not exceed 10 mg/m³ for ammonia, 5 mg/m³ for hydrogen sulfide and 0.2% for carbon dioxide [5,6,7].

Slaughterhouses of poultry farming were completed with flow-mechanized conveyors with spatially suspended conveyors with a capacity of 500-3000 heads per hour. According to the technological stages, the labor division of workers of poultry farms is carried out. To care for poultry in the workshops of the parent and industrial herd, teams and teams are organized as part of poultry operators, mechanics, operators, night and auxiliary poultry women, electricians. Work in these workshops with caged birds was characterized by moderate physical exertion and a certain neuro-emotional stress during the performance of operator functions. In workshops with floor keeping of poultry, the low productivity of manual labor increases.

The poultry-operator in the workshops of the parent and industrial flock from 15-25% of the time was busy with the poultry culling, 10-15% - watching the feed distribution, 30-35% - collecting and laying eggs in containers and up to 20% - washing troughs with a brush. At the same time, the operations associated with walking make up 35-55% of the time, and during the shift, the worker walks a distance of up to 10-12 km. (time study materials). A significant amount of physical labor, especially in the first 10-15 days of caring for a bird, a pronounced dynamic component and the need to maintain a forced working position for a long time are characteristic of work in the workshops for rearing young animals; in cage keeping - bending low or standing with arms raised high at the low upper tiers of cage batteries; in outdoor keeping birds - low bending state. In the majority of poultry farms, in the first 10-20 days, especially with floor keeping, the young were handled manually, which creates great physical activity.

In the first 15-30 days, the poultry operator spends up to 40% of the time, by clear regulation of work processes for day and night, for manually dispensing feed at least 4 times in a 6-hour shift, 15-20 for washing drinkers, feeders and equipment hot (90 ° c) solutions of disinfectants. At this stage of the technology, the operator is exposed to physical stress, high humidity of 60-90% and the influence of disinfectants. Work in hatcheries was characterized by a certain cyclicity, associated with significant physical exertion and accompanied by pronounced neuro-emotional stress. [5,6,7]

Slaughter shops were serviced by personnel with a narrow specialization in individual technological operations slaughter, gutted and monotonous production operations in the slaughter shops were carried out manually with intensive working movements at a high speed of execution of the technological process cause a high monotony of labor against a background of significant eye strain and concentration of attention (established by a survey personnel) within 10-18 mg/m³ (research continues in this direction).

The greatest amount of dust is found in the breathing zone of workers during the dry feed distribution, culling and catching of poultry, cleaning of premises 14-18 mg/m. The dust of poultry houses is predominantly organic, animal (down, feathers, dandruff, droppings, etc.), vegetable (feed, litter) origin, which are strong allergens. The production intensification and the rapid development of poultry farms in the context of industrial technology are accompanied by the rapid accumulation in the environment of various kinds of microorganisms, including those pathogenic for humans. With a specific feature of poultry production, bacterial contamination of the air reaches significant values. According to the literature, 7.5-22 thousand microorganisms are found in 1 m³ of air in poultry houses. When the content of single-tier cell bacteria is up to 509 thousand, with a full content of poultry per 1 m - 1 million microbes. Microbial contamination of the open atmosphere on the territory of poultry farms is 20-45 thousand colonies per 1 m³. The microflora of poultry farms consists of opportunistic microorganisms (Staphylococcus aureus and White, hemolytic streptococcus, intestinal coli, etc.), along with them, pathogenic microorganisms of the intestinal group, especially Salmonella, causative agents of psittacosis and toxoplasmosis, fungal microflora are found. This is the material for further research. [3,4, 7, 8] The conducted research showed that poultry farms had a significant impact on the state of the air environment in the surrounding area (tab).

Some parameters of chemicals around the poultry complex

Distance from the poultry complex (m)

	chemical substances	200	400	600	1000	1500	2000
1	Ammonia content mg/m	250	175	98	42	19	9
2	Hydrogen sulfide content mg/m ³	18	13	9	6	4	1,5
3	Carbondioxide content %	0,9	0,7	0,6	0,4	0,3	0,2

The maintenance personnel of poultry farms, when caring for poultry livestock, had to stay for a long time (6-8 hours) directly in the premises for keeping poultry, where, according to zoo technical requirements, a certain microclimate is maintained (temperature 30-35 ° C, humidity 70 + 80%).

In the studied poultry farm in the workshops and in some areas, the microclimate parameters did not always correspond to the sanitary and hygienic standards: in the cold season, the air temperature in the buildings for young animals was 28-35 ° C, in the buildings for keeping the parent flock and industrial meat breeds of poultry, on the contrary the temperature is kept at a relatively low level (2.5-12 °C), the relative humidity of the air during this period ranges from 49 to 90%, depending on the features of heating and ventilation at an air speed of up to 2.5 m/s. The air environment of poultry houses is polluted by gaseous products, in particular ammonia, hydrogen sulfide, intestinal gases, carbon dioxide, which are formed during the life of the bird and as a result of the decomposition of organic substrate (feed, litter, droppings, down, feathers). The amount of continuously generated gases is determined by the age of the bird, the way it is kept, the state and organization of forced air exchange.

When chickens are kept from 1m of litter, ammonia 10-25 mg/h, hydrogen sulfide 4-15 mg/h, carbon dioxide 4-5 mg/h are released. With a cage keeping of 50 thousand laying hens, 127.5 m³ of carbon dioxide are produced every hour. According to our data, in the premises for the content of laying hens, the ammonia content was 15-35 m³, hydrogen sulfide 10-15 m³ and carbon dioxide 5-8 m³. The above factors are not indifferent to the body of those working in poultry farms. The most unfavorable factor on poultry farms is dust. The concentration of dust in the air in poultry houses varies widely.

In a laboratory study around a poultry farm at a distance of 1000 meters in the atmospheric air, the concentration of ammonia was 42 mg/m³, hydrogen sulfide - 6 mg/m³, which dictates the need to revise the sanitary protection zone when planning the construction of poultry farms and complexes.

CONCLUSION: Thus, the unfavorable factors of the working environment of poultry farms are intense physical labor, neuropsychic stress, exposure to the human body of chemicals, bacterial and dust aerosols, fungal microflora, excrement and other poultry waste products.

The above urgently requires a qualifying scientific analysis and the development of scientifically grounded and effective health improvement measures to improve working conditions for workers and protect the atmospheric air around poultry complexes and farms. Among the important recreational activities is the planning solution for the placement of poultry complexes and farms in relation to settlements. Poultry houses, auxiliary buildings and structures of poultry farms, in accordance with the sanitary standards and rules for the protection of atmospheric air SanRN No. 0350-17, should be located on the territory separated from the residential development by a sanitary protection zone from 300 to 1500 meters, which is subject to their adjustment.

The planning and organization of the territory, the placement of individual production facilities on it is carried out taking into account the zoohygienic and veterinary and sanitary requirements aimed at preventing the introduction of infection from the outside, preventing the spread of infectious diseases among the population, preventing air pollution from emissions from poultry farms. In order to radically improve working conditions and reduce the incidence of poultry farmers, the pace of transition from private mechanization to continuous automated technology based on multi-tier cage batteries with full automation of the processes of feed distribution, drinking, dropping, collecting eggs, management and control of the microclimate and other technological operations should be accelerated (disinfection of premises, eggs, washing equipment, inventory, etc.).

For the transportation of manure, it is necessary to use more extensively pneumatic removal systems, which allows reducing the number of maintenance personnel and vehicles, as well as improving the sanitary working conditions of workers in poultry farms. A prerequisite for the protection of atmospheric air when cleaning poultry houses, hatcheries, feed shops and other production areas from dust and bacterial aerosols is the installation of mechanical filters of various designs on the inflow and discharge into the atmosphere. [1, 2, 3]

In incubator shops, it is recommended to use not only light, but also sound alarms on control and automatic control panels, in places of intense dust formation, local exhaust ventilation. Egg testers, candling and sorting of chicks should be done in dark colored clothing against a dark background. In slaughter shops, it is necessary to mechanize and automate production operations. The epidemiological well-being of poultry farms is ensured by the admission of service personnel and visitors to the production areas through sanitary and veterinary access checks with a change of everyday clothes for special clothes, clothes and shoes.

Preliminary and periodic medical examinations are important for the prevention of occupational diseases in poultry farmers, according to Order No. 300 M3 of the Republic of Uzbekistan of 2000.

REFERENCES:

1. Hygienic optimization of the light environment of working conditions when working with light-sensitive materials: method. Recommendations. — L., 1984, —p. 14-15.
2. Occupational hygiene. / Ed. N.F. Izmerov and V.F. Kirillova. - M.: GEOTAR -Media. — 2008. — 584 p.
3. Methodology for a special assessment of working conditions // App. No. 1 to the order of the Ministry of Labor and Social Protection of the Russian Federation of January 24, 2014., №33n.
4. Nedzelsky A.F. Air purification from dust and biological aerosols in the poultry house. Zagorsk, 1996
5. Okhrimenko A.P., Witte P.N. Comparative assessment of the impact of 12 and 8 hour working day on the physiological functions of female poultry farm operators. VKN: Occupational Hygiene, Kiev 1987
6. Occupational Health Guide. Volume 1. / Ed. N.F. Izmerova. - M.: Medicine. — 1987. — p. 15.
7. Guidelines for the hygienic assessment of the factors of the working environment and the labor process. Criteria and classification of working conditions. Methodical guide, 2.2.2006-05.
8. Selyansky V.M. Microclimate in poultry houses - M: Kolos, 1975
9. Sanitary norms and rules for the protection of atmospheric air in populated areas of the Republic of Uzbekistan-SanRN No. 0350-17, Tashkent 2017
10. Sorokin G.A. The difference between the age and experience dynamics of health indicators of workers - a criterion for comparing occupational and non-occupational risks // Hygiene and Sanitation. — 2016. — № 4. — p. 355-361.